

Program Description

The Aircraft Fabrication and Assembly certificate is designed to prepare students for entry-level employment in the aerospace industry. Students who complete this certificate program will have the necessary skills to be employed by aircraft manufacturers and subcontractors in aircraft structures and composites fabrication and assembly. The Associate Degree is designed to prepare students for the Aircraft Manufacturing Technology (AFMT) Bachelor's Degree of Science. Students must receive a minimum grade of "C" or better in all required core courses and the specific courses listed as program electives to qualify for the degree or certificate.

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Rickey Sutton	2532
Joel Treadwell	2410
Dr. Steven Walden	2562

Career Options

Basic Aircraft Assembler	General Mechanic Technician
Composite Fabricator	Low Observable Technician
Electrical Technician	Multi-skilled Composite Tech
(Careers may require education beyond the two-year college level.)	

Program Learning Outcomes

Blueprints and Structures

1. Plan, design, and construct aircraft structures and blueprints to industry standards using sheet metal and composites materials.
2. Analyze and evaluate critical aspects of the aerospace industry related to safe work practices, standard shop practices, proper use of tools, power equipment, and personal protective equipment.
3. Analyze, evaluate and summarize the aviation/aerospace arena and various aircraft case study outcomes.

Advanced Aircraft Structures Certification

1. Analyze and evaluate critical aspects of the aerospace industry related to safe work practices, standards and tolerances, standard shop practices, proper use of tools, power equipment, and personal protective equipment.
2. Analyze, evaluate, troubleshoot, and repair structural assembly systems to meet air worthy standards

Aircraft Fabrication and Assembly Technician

1. Plan, design, and construct aircraft structures to industry standards using sheet metal and composites materials.
2. Analyze and evaluate critical aspects of the aerospace industry related to safe work practices, standards and tolerances, standard shop practices, proper use of tools, power equipment, and personal protective equipment.
3. Assure that actions and decisions are based on ethical work practices and human factors directly related to proficiency level degradation in the work environment.
4. Use, read, and interpret industry standard blueprints to construct aircraft components.

Locally Approved Certificate

Blueprints and Structures

The Blueprints and Structures certificate program includes course work that will prepare students for entry-level employment in the aerospace industry with an emphasis in ethical workplace standards. Students who complete this certificate will have the necessary skills to be employed by aircraft manufacturers and subcontractors in a variety of positions. Principles and techniques of aircraft structural, blueprint, and assembly will be thoroughly conveyed in both a lecture and laboratory environment as well as the ethical dynamics of the workplace.

Required Courses (15 units):	units
AFAB 110, Introduction to Aircraft Structures, Blueprint and Manufacturing Documentation	3
AFAB 115, Aircraft Structures	8
AFAB 130, Aerospace Workplace Issues and Ethics	4

Total 15

Certificate Program

Advanced Aircraft Structures Certification

Students who complete the certificate have enhanced employability in the field of aerospace technology. They have enhanced promotional opportunities into supervisory and/or management positions. The certificate will provide students with advanced techniques and skills to broaden their knowledge with which to evaluate and troubleshoot complex task. The advanced skills will assist the students in identifying inefficiencies and reducing operational waste, while improving the ability to communicate clearly and effectively.

Required Courses (19 units):	units
AFAB 210, Aircraft Production Systems	4
AFAB 215, Advanced Aircraft Sheetmetal & Composite Structures	8
AFAB 220, Advanced Composite Fabrication, Assembly, and Repair	7
	Total 19

Aircraft Fabrication and Assembly Technician

The certificate and associate degree programs include coursework to help prepare students for entry-level employment in the aerospace industry. Students who complete this program will have the necessary skills to be employed by aircraft manufacturers and subcontractors in a variety of positions.

Required Courses (26 units):	units
AFAB 110, Introduction to Aircraft Structures, Blueprint and Manufacturing Documentation	3
AFAB 115, Aircraft Structures	8
AFAB 120, Composites Fabrication and Repair	7
AFAB 130, Aerospace Workplace Issues and Ethics	4
AFAB 210, Aircraft Production Systems	4
	Total 26

Associate Degree

Aircraft Fabrication and Assembly Technician

The requirements for an associate degree in Aircraft Fabrication and Assembly Technician may be satisfied by completing 26 units of required courses, 21 units of general education requirements, and sufficient elective credits to total 60 units. Students who complete the associate degree have enhanced employability in the field of aerospace technology. They have enhanced promotional opportunities into supervisory and/or management positions as they gain experience and training within this career field.

The associate degree will also provide students with a broad range of knowledge with which to evaluate and appreciate the physical environment, the culture, and the society in which they live and with the ability to think and communicate clearly and effectively.

Required Courses (26 units):	units
AFAB 110, Introduction to Aircraft Structures, Blueprint and Manufacturing Documentation	3
AFAB 115, Aircraft Structures	8
AFAB 120, Composites Fabrication and Repair	7
AFAB 130, Aerospace Workplace Issues and Ethics	4
AFAB 210, Aircraft Production Systems	4
	Total 26

Fulfillment of the requirements, as listed in this Recommended Pathway, for the associate degree in Aircraft Fabrication and Assembly Technician (AFAB) will satisfy, in part, the minimum eligibility requirements for the Baccalaureate in Science in Airframe Manufacturing Technology (AFMT) degree.

For additional information, please review pgs. 87-88.

Recommended Pathway	
Fall, First Semester	units
AFAB 110, Intro to Aircraft Structures, Blueprint and Manufacturing Documentation	3
AFAB 115, Aircraft Structures	8
AFAB 120, Composites Fabrication and Repair	7
	Total 18
Spring, Second Semester	
AFAB 130, Aerospace Ethics and Issues	4
CHEM 101, Introductory Chemistry (CSU GE B1)	5
POLS 101, American Political Institutions (CSU GE D)	3
HIST 107 <i>or</i> HIST 108 <i>or</i> HIST 110 <i>or</i> HIST 111 (CSU GE D)	3
ENGL 101, College Composition (CSU GE A2)	3
	Total 18
Fall, Third Semester	
AFAB 210, Aircraft Production Systems	4
COMM 101, Introduction to Public Speaking (CSU GE A1)	3
CSU GE Area C	3
CSU GE Area E (recommended HD 101 or HE 101)	3
	Total 13
Spring, Fourth Semester	
ENGL 115, Introduction to Technical Communication (CSU GE A3)	3
MATH 135, Plane Trigonometry (GE Area D2)	3
PSY 101, General Psychology (CSU GE D)	3
AVC (GE requirement area F)	3
	Total 12
	Degree Total 61

Prerequisite Completion

All prerequisite courses must be completed with a satisfactory grade in order to enroll in the next course. According to Title 5, Section 55200(d), a satisfactory grade is a grade of "A," "B," "C" or "P". Classes in which the Pass/No Pass option is available are indicated with an asterisk (*) before the course title. See "Pass/No Pass Option" in the catalog for full explanation.

Aircraft Fabrication and Assembly Courses

AFAB 110 *INTRODUCTION TO AIRCRAFT STRUCTURES, BLUEPRINT AND MANUFACTURING DOCUMENTATION

3 units

3 hours weekly

This course is designed to provide students with the basic knowledge of aircraft structures, shop mathematics, basic hand measuring devices and familiarization with aircraft manufacturing documentation, such as blueprints and work instructions. Classroom lecture and hands-on practice in reading and interpreting actual blueprints and manufacturing documentation. (AVC)

AFAB 115 *AIRCRAFT STRUCTURES

8 units

10 hours weekly [7 lecture, 3 lab]

Prerequisite: Completion of or concurrent enrollment in AFAB 110.

Designed to give students the necessary skills to perform journeyman aerospace structures assembly and repair. Classroom lecture and hands-on practice in step-drilling holes in aluminum alloys and composites, and the installation of rivets and special fasteners. In addition, students will demonstrate the proper preparation and application of aircraft sealants and the assembly of sheet metal and composite substrates as a final project of moderate complexity. (AVC)

AFAB 120 *COMPOSITES FABRICATION AND REPAIR

7 units

9 hours weekly [6 lecture, 3 lab]

Prerequisites: Completion of or concurrent enrollment in AFAB 110

This course is designed to familiarize students with the basic aircraft composite manufacturing techniques and knowledge. The content covered in this course deals with wet and prepreg layup, vacuum bagging techniques and processes, surface preparation for gap filling and back masking, and the manufacturing of composite components/parts. This course consists of both classroom lecture and hands-on practice. Students are required to interpret engineering prints, work instructions, manufacturing documentation and/or drawings. (AVC)

AFAB 130 *AEROSPACE ETHICS AND ISSUES

4 units

4 hours weekly

Addresses the ethical responsibilities of aircraft maintenance technicians (AMTs). Course will articulate an ethical framework for aircraft technicians by critically reflecting on aerospace practices and examining the ethical challenges that confront the aerospace industry, and aerospace technicians and professionals working within these organizations. Includes: social and personal responsibilities in aerospace, truth-telling and disclosure, whistle-blowing, professionalism, safety, and human factors. A detailed analysis of many case studies in industry will be reviewed. (CSU, AVC)

AFAB 140 *PNEUDRAULICS

2 units

3 hours weekly [1.5 lecture, 1.5 lab]

Prerequisite: Completion of AFAB 110 or AFAB 115.

Entry Level course designed to familiarize students with the basic principles of pneudraulics, fluid lines and fittings and the proper assembly and installation. (AVC)

AFAB 150 SURFACE PREPARATION AND MATERIAL APPLICATIONS

7 units

9 hours weekly [6 lecture, 3 lab]

Prerequisite: Completion of AFAB 110, AFAB 115, & AFAB 120.

This course is designed to familiarize students with the basic aircraft surface preparation and material application techniques and knowledge. The content covered in this course deals with surface preparation of both metal structures and composite materials, various material applications, and masking techniques. This course consists of both classroom lecture and hands-on practice. Students are required to interpret engineering prints, work instructions, manufacturing documentation and or drawings. (AVC)

AFAB 210 *AIRCRAFT PRODUCTION SYSTEMS

4 units

4 hours weekly

Prerequisite: Completion of AFAB 115 or AERO 230.

The course is designed to give students with basic aircraft fabrication skills the necessary knowledge and practical experience to perform effectively and grow professionally in an aircraft production organization. The course will introduce the student to the many functional groups that manage, design, plan, schedule, supply, and oversee aircraft production operations. Students will gain experience with production and quality standards, process controls, and documentation requirements through participation in hands-on laboratory fabrication projects. (AVC)

AFAB 215 * ADVANCED AIRCRAFT SHEETMETAL & COMPOSITE STRUCTURE

8 units

10 hours weekly [7 lecture, 3 lab]

Prerequisite: Completion of AFAB 115.

This course is designed to familiarize students the advanced aerospace structural assembly, which includes instructor-led lecture and hands-on training in shop safety and workmanship fundamentals, the use of tools and equipment, MES functions, and structures fundamentals including 5S, blueprint reading, hole prep, drilling various materials, sealing, liquid shim applications, and inspections. Students are required to interpret engineering prints, work instructions, manufacturing documentation and or drawings. (AVC)

AFAB 220 * ADVANCED COMPOSITE FABRICATION, ASSEMBLY, AND REPAIR

7 units

9 hours weekly [6 lecture, 3 lab]

Prerequisite: Completion of AFAB 120.

This course is designed to familiarize students with advanced aircraft composite manufacturing techniques and knowledge, which includes instructor-led lecture and hands-on training in shop safety and workmanship fundamentals, the use of tools and equipment, 5S, MES functions, and composite system fundamentals including layup, debulking, ply direction, vacuum bagging, leak detection, curing, PIs, surface prep, pinking, darting, overlapping, buttsplicing, bonding, and inspections. Students are required to interpret engineering prints, work instructions, manufacturing documentation and or drawings. (AVC)